



STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION

State Revolving Fund Loan Program

William R. Snodgrass - Tennessee Tower
312 Rosa L. Parks Avenue, 12th Floor
Nashville, Tennessee 37243-1102

FINDING OF NO SIGNIFICANT IMPACT

Approval of Facilities Plan

Smyrna (Rutherford County), Tennessee

Loan No. CG7 2019-423

January 25, 2019

The National Environmental Policy Act requires federally designated agencies to determine whether proposed major agency actions will significantly affect the environment. One such major action, defined by Section 511(c)(1) of the Clean Water Act, is the approval of a facilities plan prepared pursuant to Title VI of the Clean Water Act for clean water projects. In making this determination, the State Revolving Fund (SRF) Loan Program assumes that all facilities and actions recommended by the plan will be implemented. The state's analysis concludes that implementing the plan will not significantly affect the environment; accordingly, the SRF Loan Program is issuing this Finding of No Significant Impact (FNSI) for public review.

The Town of Smyrna has completed the facilities plan entitled "Wastewater Treatment Plant Expansion (5.85 MGD to 9.0 MGD)" dated March 2018. The facilities plan provides recommendations for improvements to the wastewater treatment system serving the Town of Smyrna. This project includes installing three new multi-rake screens for influent screening; installing three new raw wastewater pumps; constructing a new anaerobic basin upstream of the existing oxidation basins; constructing a new oxidation basin to work in conjunction with the existing six oxidation basins; constructing two new clarifiers to work in conjunction with the six existing clarifiers; installing three new return activated sludge pumps; installing a new rotary drum thickener for waste sludge thickening; installing three new fabric disk filters for effluent treatment; constructing a new post-aeration tank to work in conjunction with the two existing tanks; replacing the existing ultraviolet (UV) disinfection system; installing a third reclaimed water pump to the two existing pumps at the effluent reuse pumping facility; and replacing two existing belt filter presses with two centrifuges for sludge dewatering. The total estimated project cost is \$33,486,775. A Clean Water State Revolving Fund (CWSRF) loan in the amount of \$3,000,000 has been requested for this project. This project will be funded with a \$2,700,000 loan with \$300,000 in principal forgiveness that will not have to be repaid by the Town. The remainder of the project costs will be provided by the Town of Smyrna.

Attached is an Environmental Assessment containing detailed information supporting this proposed action. Comments supporting or disagreeing with this proposed action received within 30 days of the date of this FNSI will be evaluated before we make a final decision to proceed.

If you wish to comment or to challenge this FNSI, send your written comment(s) to:

Ms. Felicia D. Freeman, Environmental Manager
State Revolving Fund Loan Program
Tennessee Department of Environment and Conservation
William R. Snodgrass - Tennessee Tower
312 Rosa L. Parks Avenue, 12th Floor
Nashville, Tennessee 37243-1102

or call or e-mail (615) 253-5134 or Felicia.d.freeman@tn.gov.

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A. PROPOSED FACILITIES AND ACTIONS; FUNDING STATUS

The Town of Smyrna has completed the facilities plan entitled "Wastewater Treatment Plant Expansion (5.85 MGD to 9.0 MGD)" dated March 2018. The facilities plan provides recommendations for improvements to the wastewater treatment system serving the Town of Smyrna. This project includes installing three new multi-rake screens for influent screening; installing three new raw wastewater pumps; constructing a new anaerobic basin upstream of the existing oxidation basins; constructing a new oxidation basin to work in conjunction with the existing six oxidation basins; constructing two new clarifiers to work in conjunction with the six existing clarifiers; installing three new return activated sludge pumps; installing a new rotary drum thickener for waste sludge thickening; installing three new fabric disk filters for effluent treatment; constructing a new post-aeration tank to work in conjunction with the two existing tanks; replacing the existing ultraviolet (UV) disinfection system; installing a third reclaimed water pump to the two existing pumps at the effluent reuse pumping facility; and replacing two existing belt filter presses with two centrifuges for sludge dewatering. The facilities planning area and project location are indicated on Figure No. 1 of this Environmental Assessment.

FUNDING STATUS (CWSRF)

The treatment facilities described above comprise the scope of Loan No. CG7 2019-423 scheduled for funding in fiscal year 2019. The estimated project costs are summarized in the following tabulation:

<u>PROJECT CLASSIFICATIONS</u>	<u>COSTS (\$)</u>
Administrative & Legal	43,290
Planning Fees	80,000
Design Fees	1,325,000
Engineering Basic Fees	637,500
Other Engineering Fees	107,000
Resident Inspection	324,000
Construction	29,365,500
Contingencies	1,604,485
TOTAL	33,486,775
Loan	3,000,000
Amount Designated for Principal Forgiveness (Will not have to be repaid)	300,000
Local share	30,486,775

The Town of Smyrna has applied for a \$3,000,000 CWSRF loan. This project will be funded with a \$2,700,000 loan and \$300,000 in principal forgiveness that will not have to be repaid by the Town. The remainder of the project costs will be provided by the Town of Smyrna.

B. EXISTING ENVIRONMENT

The Town of Smyrna's Planning Area is located in Rutherford County in middle Tennessee. A discussion of existing environmental features in the area includes the following:

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SURFACE WATERS

Surface waters within the proposed planning area include Stewart Creek, Baxter Branch of Stewart Creek, and the West and East Fork of the Stones River. A portion of the Percy Priest Reservoir is also located in the Town of Smyrna's Planning Area. Designated uses for the Stones River and Percy Priest Reservoir include fish and aquatic life, irrigation, livestock watering and wildlife, and navigation. The Town of Smyrna supplies drinking water to all areas within the Town limits from a raw water intake on Percy Priest Reservoir.

GROUNDWATER

The underlying geologic formations in the Planning Area derive from the Ordovician Period. The Ordovician formation is composed of relatively pure limestone 30 meters thick or greater, separated by shaley limestone. Groundwater in the planning area is restricted primarily to fractures and other openings in the calcareous rocks. The average well is 144 feet deep and 48 percent of the wells drilled must go deeper than 100 feet to obtain water. These wells yield an average of 9 gallons per minute and 89 percent of them yield sufficient water for domestic use. Generally, ground water quality is good, containing no sulfur, iron, salt, oil, or gas.

SOILS

Soil associations occurring in the Town of Smyrna's Planning Area include the Arrington Silt Loam, Bradyville Silt Loam, and the Bradyville-Rock Outcrop Complex. Soils in the Arrington Silt Loam Association are found in flood plains and are well-drained. Soils in the Bradyville Silt Loam Complex are found in both level areas and slope or hillside areas and are well-drained. Soils in the Bradyville-Rock Outcrop Complex are found on hillsides and are well-drained.

TOPOGRAPHY

The Smyrna Planning Area is located in a limestone region in the Inner Central Basin Province and the entire area is underlain with limestone rock. In many places the rock is near the surface of the ground. In general, the topography of the area is gently rolling with elevations ranging from 500 to 650 feet above mean sea level.

OTHER ENVIRONMENTAL FEATURES

No wild or scenic rivers or unique agricultural, scientific or cultural areas were identified in the Town of Smyrna's Planning Area. The Sunnybell Cedar Glade State Natural Area is located within the Planning Area and will not be affected by this project.

C. EXISTING WASTEWATER FACILITIES

The Town of Smyrna's wastewater treatment system consists of one wastewater treatment plant (WWTP) constructed in 1982, a wastewater collection system, and pumping stations. The WWTP is located adjacent to the Lee Victory Recreation Park on Jack Hunter Drive off Sam Ridley Parkway. The WWTP has a design capacity of 5.85 million gallons per day (MGD). The treated effluent from the WWTP discharges into Stewart Creek at River Mile (RM) 5.65. The WWTP utilizes an activated sludge treatment process with headworks, aeration basins, clarifiers, digesters, and ultraviolet disinfection. New aeration basins and clarifiers were added in 2003, and a new headworks facility was added in 2007. The WWTP currently produces an annual average daily flow of 5.6 MGD. The WWTP currently meets its NPDES permit requirements. Sludge is dewatered on belt presses prior to being sent to an approved landfill. The Town of

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Smyrna disposes dewatered sludge at the state-approved Middle Point Landfill and will continue this procedure.

The WWTP currently operates under the National Pollutant Discharge Elimination System (NPDES) Permit No. TN0020541 that includes the following parameters and effluent limitations:

<u>PARAMETER</u>	<u>EFFLUENT LIMITATIONS</u>
CBOD ₅ (May 1-October 31)	5 milligrams per liter (mg/l)
CBOD ₅ (Nov. 1-April 30)	10 mg/l
Suspended Solids	30 mg/l
E. coli	126/100 colonies per milliliter
Dissolved Oxygen	7.0 mg/l instantaneous minimum
Ammonia as N (May 1-October 31)	0.7 mg/l
Ammonia as N (Nov. 1-April 30)	1.5 mg/l
Chlorine Residual, Total	0.2 mg/l instantaneous maximum
Settleable Solids	1.0 daily maximum (milliliter/liter)
pH	6.5-8.5 (Standard Units)
Total Inorganic Nitrogen	5 mg/l
Total Phosphorous	1 mg/l

The existing collection system consists of approximately 220 miles of sewer lines ranging in size from 8-inches to 30-inches in diameter with PVC and ductile iron being the primary sewer line materials. There are 16 pumping stations in the collection system. The collection system is not subject to excessive infiltration and inflow.

D. NEED FOR PROPOSED FACILITIES AND ACTIONS

The Town of Smyrna owns and operates a WWTP that discharges into Stewart Creek, a tributary of Percy Priest Lake, at RM 5.65. The existing WWTP has a permit capacity of 5.85 MGD. The average annual flow is 5.79 MGD. The population of the Planning Area is expected to increase substantially as indicated in the following table. Because of the anticipated population increase, more treatment capacity will be required. This project will be beneficial to the environment and public health by providing the required increase in treatment capacity to protect the water quality conditions of the receiving stream.

EXISTING AND PROJECTED FACILITY CONDITIONS

<u>POPULATION</u>	<u>EXISTING (2018)</u>	<u>PROJECTED (2048)</u>
Town of Smyrna	50,568	83,622
% Sewered	100%	100%
Planning Area Excluding Town of Smyrna	29,065	20,781
% Sewered	0	0
Total Planning Area	79,633	104,403
% Sewered	64%	80%

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<u>CITY/UD WWTP FLOWS (MGD)</u>	<u>EXISTING (2018)</u>	<u>PROJECTED (2048)</u>
Domestic/Commercial	3.92	7.78
Industrial	1.6	3.13
Infiltration/Inflow (during rainfall events)	0.08	0.04
TOTAL	5.6	10.95

A modified NPDES Permit was issued on September 7, 2018 with the following parameters and effluent limitations which will be effective for the proposed WWTP expansion to 9.0 MGD.

<u>PARAMETER</u>	<u>EFFLUENT LIMITATIONS</u>
CBOD ₅ (May 1-October 31)	5.0 mg/l
CBOD ₅ (Nov. 1-April 30)	10 mg/l
e. coli	126/100 colonies per milliliter
Dissolved Oxygen	7.0 mg/l instantaneous minimum
Ammonia as N (May 1-October 31)	0.7 mg/l
Ammonia as N (Nov. 1-April 30)	1.5 mg/l
Inorganic Nitrogen	92,845 lb/yr (rolling average)
Phosphorous	18,569 lb/yr (rolling average)
Chlorine Residual, Total	0.02 mg/l daily maximum
Settleable Solids	1.0 daily maximum (milliliter/liter)
pH	6.5-8.5 (Standard Units)

E. ALTERNATIVES ANALYSIS

Several alternatives, including a “No-action” alternative, were evaluated in the March 2018 facilities plan. A summary discussion of the evaluation of each alternative and the selection of the recommended plan follows:

NO ACTION

The "No-action" approach was not a viable alternative. The WWTP is currently operating at its design flow capacity. Future residential and industrial growth will require more WWTP capacity. Therefore, some action must be taken to protect the environment and public health, and this alternative was rejected.

TRANSPORT ALL SEWAGE FLOWS TO THE METRO NASHVILLE COLLECTION SYSTEM FOR TREATMENT

This alternative would involve constructing a piping infrastructure needed to transport sewage from the Smyrna collection system to Metro Nashville’s existing Hurricane Creek Pump Station. Metro Nashville would also require Smyrna to pay for necessary upgrades to its infrastructure to transport the increased flows to Metro Nashville’s Central WWTP for treatment. This alternative was not the most cost-effective and was rejected.

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LAND APPLICATION OF TREATED WWTP EFFLUENT

This alternative would utilize spray irrigation to land apply treated effluent from the WWTP. This type of effluent disposal requires large areas of land in order to achieve a substantial amount of spray irrigation disposal volume. Approximately 940 acres would be required at an approximate cost of \$56,000,000. Because of the amount of land that would be required and the price of land in the area, this was not the most cost-effective alternative and was rejected.

EXPAND AND UPGRADE EXISTING WWTP

This alternative would involve various upgrades and expansions to the existing WWTP in order to increase the design capacity from 5.85 MGD to 9.0 MGD. Improvements would include new influent pumping and screening, a new anaerobic basin, a new oxidation ditch to work in conjunction with the existing oxidation ditches, two new clarifiers to work in conjunction with the existing clarifiers, new return activated sludge pumps, a new rotary drum thickener for biosolids processing, three new fabric disk filters, a new post-aeration tank, and replacement of the existing UV disinfection system. This alternative was the most cost-effective and was selected.

F. ENVIRONMENTAL CONSEQUENCES; MITIGATIVE MEASURES

The environmental benefits of this project will be protection of the water quality conditions in the area.

During the construction phase, short-term environmental impacts due to noise, dust, mud, disruption of traffic, runoff of silt with rainfall, etc., are unavoidable. Minimization of these impacts will be required; however, many of these minimization measures will be temporary and only necessary during construction. Using the following measures to prevent erosion will minimize impacts on the environment:

1. Specifications will include temporary and permanent measures to be used for controlling erosion and sediment.
2. Soil or landscaping maintenance procedures will be included in the specifications.
3. The contractor will develop an Erosion Control Plan. It will contain a construction schedule for each temporary and permanent measure controlling erosion and sediment. It will include the location, type, and purpose for each measure and the times when temporary measures will be removed or replaced.

These measures, along with requiring the contractor to return the construction site to as-good-as or better-than its original condition, will prevent any adverse impacts due to erosion.

G. PUBLIC PARTICIPATION; SOURCES CONSULTED

A Public Meeting was held on December 11, 2018 at 6:00 p.m., local time. The selected plans for the collection system and distribution system and user charges were described to the public, and their input was received. This agency is not aware of any unresolved public objections that may have been voiced before or after the public meeting regarding this project.

At the projected time of the initiation of the loan repayment, user rates for the typical commercial/residential user (5,000 gallons per month) will be \$28.73 for sewer. The existing

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user charges are projected to be sufficient to repay the SRF loan. Therefore, no incremental increase in user charges will be required.

Sources consulted about this project for information or concurrence were:

1. Tennessee Department of Agriculture
2. Tennessee Department of Economic and Community Development
3. Tennessee Department of Environment and Conservation (TDEC), Division of Air Pollution Control
4. TDOT
5. Tennessee Historical Commission
6. TDEC, Division of Archaeology
7. TDEC, Division of Natural Areas
8. TDEC, Division of Solid Waste Management
9. TDEC, Division of Water Resources
10. Tennessee Wildlife Resources Agency
11. United States Army Corps of Engineers
12. United States Fish and Wildlife Service
13. Town of Smyrna
14. Rutherford County
15. Dempsy, Dilling & Associates, Smyrna, TN